

## Gypsum Stack Roads

- *The remedial objective of this action is to reduce visible fugitive emissions generated by vehicular traffic on permanent roads located on the face of the gypsum stack.*
- *The performance standard is the successful implementation of the final design.*

### Characteristics

Gypsum (hydrated calcium sulfate) is the primary byproduct from the phosphate ore processing operations conducted at the Simplot Don Plant. Approximately 6,000 tons (dry weight basis) of gypsum is produced daily and slurried to the gypsum stack.

The gypsum stack has three separate cells: the lower stack and the eastern and western cells of the upper stack.

The permanent gypsum stack roads, subject to the remedial action, are located on the north face of the gypsum stack, and are identified as the West Face Road and the East Face Road.

Human health risks associated with the inhalation pathway were estimated in EPA's risk assessment. For the Simplot Plant Area risks were estimated for current workers (maintenance workers and gypsum stack workers). Risks were also estimated for current residents and for hypothetical future residents living adjacent to the FMC and Simplot plants.

An emission inventory for Simplot and FMC sources was presented in Appendix AE of the RI Report. As shown, at the time of the RI constituents were emitted to the air from numerous sources at both the FMC and Simplot facilities.

For gypsum stack workers, total Incremental Cancer Risks (i.e., the estimated cancer risks in excess of background) were estimated at  $6.0 \times 10^{-6}$  for inhalation of the chemical carcinogens cadmium, hexavalent chromium and arsenic and  $2.0 \times 10^{-5}$  for inhalation of the radiological carcinogen polonium-210.

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For residents Incremental Cancer Risks due to inhalation of chemical carcinogens were estimated from  $7.22 \text{ E-}7$  to  $2.24 \text{ E-}6$  (the background cancer risk was estimated at  $1.5 \text{ E-}6$ ). Risk drivers were arsenic cadmium and hexavalent chromium. For radiological carcinogens, lead-210 and polonium-210 were the major risk drivers with estimated Incremental Cancer Risks ranging from  $2.96 \text{ E-}6$  to  $1.11 \text{ E-}5$  (background risks were estimated at  $2.8 \text{ E-}5$ ).

Risks estimated above have been reduced due to the closure of the FMC facility in December 2001 and the resultant elimination of emission sources associated with operation.

#### **RI Allocation of Constituent Emissions**

Constituent	Percent Emitted from FMC	Percent Emitted from Simplot
Arsenic	91	9
Cadmium	95	5
Chromium	83	17
Lead-210	94	6
Polonium-210	99.93	0.07

The gypsum stack roads were identified as a relatively small source of constituents to air at the Simplot Don Plant. The RI emission inventory provides emission estimates for the entire gypsum stack operation (primarily roads and dike construction) and using these values will overestimate emissions from the roads alone.

#### **RI Estimates of Constituent Emissions from the Gypsum Stack**

Constituent	Percent of Total Emissions from FMC and Simplot
Arsenic	0.05
Cadmium	0.21
Chromium	0.24
Lead-210	0.07
Polonium-210	0.004

While detailed modeling would be required to estimate the contribution of any one source to total air concentrations at a particular location, these values provide summary information on the low overall magnitude of the contribution of gypsum stack emissions to site-related risks associated with the air inhalation pathway.

### **Remedial Design**

Simplot is proposing to place gravel road base on the permanent roads on the face of the gypsum stack.

Don Plant operations personnel have reported that tests have been performed in the past using dust control additives such as magnesium chloride. The results of these informal tests indicate that such application does not result in lasting dust control under the routine traffic conditions on these gypsum roads.

Another option considered to address fugitive dust emissions was the routine watering of the roads. This alternative would be less effective and more costly than placement of a gravel road.

To provide a barrier between the gypsum and the gravel road base a geotextile fabric will be used to prevent the migration of fines and prevent the gravel from being packed down into the gypsum.

It is estimated that the remedial action will take approximately 2 to 3 weeks to complete.

